Development and Psychopathology (2025), 1–21
doi:10.1017/S0954579424001810

CAMBRIDGE UNIVERSITY PRESS

Regular Article

Interpersonal risk factors for suicide in daily life among young people: A review of intensive longitudinal studies

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Abstract

Suicide is one of the leading causes of death among individuals aged 10–24. Research using intensive longitudinal methods to identify near-term predictors of suicidal thoughts and behaviors (STBs) has grown dramatically. Interpersonal factors may be particularly critical for suicide risk among young people, given the heightened salience of interpersonal experiences during adolescence and young adulthood. We conducted a narrative review on intensive longitudinal studies investigating how interpersonal factors contribute to STBs among adolescents and young adults. Thirty-two studies met the inclusion criteria and focused on theoretical and cross-theoretical interpersonal risk factors. Negative interpersonal states (e.g., perceived burdensomeness), hopelessness, and social support were consistently associated with proximal within-person changes in concurrent, but not prospective, suicidal thoughts. Further, work examining how these processes extend to suicidal behavior and among diverse samples remains scarce. Implications for contemporary interpersonal theories and intensive longitudinal studies of STBs among young people are discussed.

Keywords: Adolescents; intensive longitudinal methods; suicide; young adults

(Received 14 March 2024; revised 9 October 2024; accepted 21 October 2024)

Suicide is the second leading cause of death among individuals aged 10–24 (Glenn et al., 2020; Ivey-Stephenson, 2022). Suicidal thoughts and behaviors (STBs) are defined as thoughts about ending one's own life and engaging in self-injurious behaviors with the intent to die, respectively. Suicidal thoughts can also include more passive thoughts about one's death or dying (i.e., passive suicidal thoughts, passive death wishes). STBs typically first onset during adolescence (ages 11–17; Nock et al., 2013). In 2021, approximately 13% of youth aged 12–17 had seriously considered suicide (Substance Abuse and Mental Health Services Administration (SAMHSA), 2022), and this rate jumped to 22% among high school students and 30% among high school females (Bayliss et al., 2022; Ivey-Stephenson, 2022). Rates of STBs continue to remain elevated into emerging and young adulthood (ages 18–29; Arnett, 2007), with 13% of young adults reporting STBs (Substance Abuse and Mental Health Services Administration (SAMHSA), 2022). Therefore, adolescence and young adulthood are two developmental periods when the risk for STBs is elevated. Given recent increases in rates of STBs among young people (Auerbach et al., 2023; Kivelä et al., 2022), it is critical to identify developmentally relevant risk factors for STBs among populations where suicide risk is elevated, such as in adolescents and young adults. *Interpersonal factors* (i.e., features of social relationships and interpersonal experiences) have been a prominent focus of research and theories on STBs. Given the heightened salience of social relationships during these developmental periods, interpersonal factors may be critical in the emergence of STBs among adolescents and young adults (Collins & Steinberg, 2008; Jorgensen & Nelson, 2018). The present review examined work on interpersonal factors that may confer risk for STBs among young people.

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Cite this article: Hutchinson, E., Scott, L., Choukas-Bradley, S., & Silk, J. (2025). Interpersonal risk factors for suicide in daily life among young people: A review of intensive longitudinal studies. *Development and Psychopathology*, 1–21, https://doi.org/10.1017/S0954579424001810

Developmental factors underlying interpersonal risk for STBs during adolescence and young adulthood

Forming and maintaining social bonds are stage-salient developmental tasks during adolescence and young adulthood (Collins & Steinberg, 2008; Dahl et al., 2018). Beginning during adolescence, adolescents and young adults undergo dramatic social transitions alongside major biological, psychological, and socio-contextual reorganization (Cicchetti, 2023). This normative restructuring of young people's social environments during adolescence and young adulthood is partly driven by neurobiological changes within networks supporting social-affective and motivational processes (for more details, see Nelson et al., 2016; Somerville, 2013). These changes begin with the onset of puberty (Guyer et al., 2016; Ladouceur, 2012) and continue through the mid-to-late 20s (Taber-Thomas & Perez-Edgar, 2015). During adolescence, youth increasingly spend more time with peers, pursue romantic relationships, and exerience conflict with parents (Dahl et al., 2018). As adolescents transition to young adulthood, they continue to expand their social network, often pursuing jobs, secondary education programs, and living away from the homes of their family of origin for the first time. Young adulthood is one of the most unstable developmental

(Arnett et al., 2014), given the high instability in relationships and social roles across personal and professional contexts (Matud et al., 2020). Therefore, adolescence and young adulthood are developmental periods in which interpersonal relationships undergo dramatic changes, which may be particularly impactful on STBs.

While these changes are a part of normative development, heightened sensitivity to interpersonal experiences during adolescence and young adulthood leaves young people particularly vulnerable to both the detrimental and protective effects of interpersonal experiences. Adolescents and young adults who experience persistent and/or severe interpersonal disruptions may be more likely to develop STBs. Interpersonal experiences such as persistent conflict, victimization, rejection, social isolation, and negative social perceptions (e.g., being a burden to others) have been consistently shown to be associated with risk for STBs among young people (for a review, see King & Merchant, 2008; Whitlock et al., 2014). Conversely, positive interpersonal experiences (e.g., social support, social connectedness, acceptance) may be particularly protective against STBs among young people (for a review, see King & Merchant, 2008; Whitlock et al., 2014). Developmental work demonstrates that young people are simultaneously more susceptible to both the detrimental impact of negative interpersonal factors and the protective impact of positive interpersonal factors (Telzer et al., 2022). Investigating the protective effects of interpersonal experiences allows researchers and clinicians to leverage the potential buffering effects of such experiences to mitigate the risk of STBs among young people. Therefore, interpersonal factors may represent a key set of developmentally relevant risk and protective factors for STBs among adolescents and young adults.

Limitations in identifying proximal interpersonal factors that contribute to STBs among young people

While research identifying interpersonal factors that contribute to STBs among young people has grown, most of this work has been cross-sectional and has focused on differences in overall levels of interpersonal risk factors, or *between-person effects* (Auerbach et al., 2023; Kivelä et al., 2022). Cross-sectional studies examining between-person effects in risk factors tell us generally who is at risk for STBs, but little about *when* and *under what conditions* vulnerable individuals may be more likely to experience STBs (Chu et al., 2017; Franklin et al., 2017; Victor et al., 2019). Additionally, previous work has typically examined STBs within long assessment windows, with the average follow-up period being approximately 7 years (Franklin et al., 2017). Therefore, little is known about *proximal* risk factors and related situational dynamics that increase the risk for STBs in the near term (e.g., hours, days, weeks) among young people.

Intensive longitudinal methods have increasingly been applied to study dynamic, near-term changes in STBs. These methods include ecological momentary assessment (EMA), daily diary, and timeline study designs. These methods primarily differ based on the frequency of assessment timepoints during the follow-up period. EMA methods, also known as experience sampling methods (ESM), assess STBs and related factors multiple times within the same day. Daily diary and timeline methods have lower temporal specificity compared to EMA. Daily diary methods assess STBs and related factors once per day, and timeline methods allow individuals to recall their STBs and related factors multiple times over longer durations (i.e., days, months, years). Assessments can occur at fixed time intervals (fixed sampling), at random time intervals (random sampling), or based on actual events (event-contingent sampling). All of these methods allow researchers to examine within-person changes in STBs and risk factors (Glenn et al., 2022; Glenn et al., 2022; Kleiman et al., 2017; Sedano-Capdevila et al., 2021). *Within-person effects* capture changes within the *same person over time*, capturing variability in risk across multiple observations. This work has largely shown that suicidal thoughts fluctuate rapidly over short spans. However, limited work has examined within-person changes in suicidal behaviors. This work highlights the need to continue to apply intensive longitudinal designs to determine when and under what conditions individuals experience acute increases in risk for suicide. Research examining interpersonal risk factors for STBs has started to utilize intensive longitudinal methods. Understanding how potential interpersonal factors vary in daily life with STBs may advance our understanding of proximal risk and help improve just-in-time interventions. This review summarized the emerging body of literature employing intensive longitudinal methods to assess within-person changes in interpersonal risk and protective factors contributing to STBs during adolescence and young adulthood. We also explored between-person moderators, such as developmental stage and gender, which might impact within-person associations between interpersonal factors and STBs.

Existing reviews of intensive longitudinal studies on STBs

Several previous reviews have been published on the feasibility of using intensive longitudinal methods to investigate STBs and have summarized a broad set of factors associated with STBs across such studies (Ammerman & Law, 2022; Kivelä et al., 2022; Kleiman & Nock, 2018; Rabasco & Sheehan, 2022; Sedano-Capdevila et al., 2021). Kleiman and Nock (2018) conducted one of the first narrative reviews summarizing the growing literature on intensive longitudinal methods examining STBs. The authors concluded that endorsement and severity of suicidal thoughts vary considerably over short spans of time (e.g., hours, days). The authors also found that suicidal thoughts generally have a quick onset and short duration (Kleiman & Nock, 2018). Additionally, several factors that predicted suicidal thoughts across short spans of time (e.g., hours, days) did not predict suicidal thoughts across more prolonged periods (e.g., weeks, months, years), highlighting the importance of identifying both proximal and distal risk factors for SBs. More recent reviews have replicated and expanded on these findings (Ammerman & Law, 2022; Kivelä et al., 2022; Rabasco & Sheehan, 2022; Sedano-Capdevila et al., 2021). Sedano-Capdevila et al. (2021) systematic review demonstrated that concurrent suicidal thoughts were associated with loneliness, time spent with family, time spent alone, and hopelessness. Kivelä et al. (2022) also demonstrated that perceived burdensomeness, thwarted belongingness, hopelessness, disconnectedness, and loneliness were associated with concurrent suicidal thoughts across adolescent and adult samples. However, these reviews have primarily focused on a broad set of time-varying risk factors rather than specific interpersonal factors. Furthermore, previous reviews have largely collapsed across adolescent and adult samples when summarizing findings. Ammerman and Law's (2022) systematic review of intensive longitudinal studies with follow-up periods ranging from 5 to 42 days (average length =16.2 days; average number of prompts per day = 5) found a lower percentage of prompts detecting suicidal thoughts in several adolescent studies compared to adult studies. Therefore, the present review provided a more focused summary of how interpersonal risk for suicide is

https://doi.org/10.1017/S0954579424001810 Published online by Cambridge University Press

operationalized in intensive longitudinal work, as well as current findings on interpersonal factors associated with STBs in daily life among young people.

Contemporary interpersonal theories and risk factors for STBs

Interpersonal risk factors have long been proposed to contribute to STBs. Early theories proposed that STBs emerge due to low social integration (Durkheim, 1897), to escape from one's social inadequacies (Baumeister, 1990), and from mental pain resulting from social isolation (Shneidman, 1993). Currently, three 'ideation-to-action' theories comprise our current theoretical framework for understanding suicide, which include the Interpersonal Psychological Theory of Suicide (IPTS; Joiner, 2005; Van Orden et al., 2010), the Integrated Motivational-Volitional Model (IMV; O'Connor, 2011), and the Three-Step Theory (3ST; Klonsky & May, 2015). The term 'ideation-to-action' reflects the position of these theories that different processes may confer risk for suicidal thoughts and suicidal behaviors. These theories argue that interpersonal risk factors primarily play a role in the emergence of suicidal thoughts. The IPTS was the first of these theories and proposed that suicidal thoughts emerge when an individual believes they negatively impact others (perceived burdensomeness), have few social connections (thwarted belongingness), and feel hopeless (Miller et al., 2018; Van Orden et al., 2010). Hopelessness is proposed to play a critical moderating role, such that perceived burdensomeness and thwarted belongingness are only associated with risk for suicidal thoughts at high levels of hopelessness (Hagan et al., 2015). The IMV proposes that defeat and humiliation may lead an individual to feel trapped (entrapment) and with few alternative solutions. Critically, the combination of feelings of entrapment and the presence of key moderators (e.g., hopelessness, feeling like a burden, disconnectedness, few reasons for living) is what may lead an individual to consider suicide (Klonsky et al., 2018). Many of the IMV's key moderators are interpersonal. Lastly, the 3ST similarly proposes that suicidal thoughts emerge from the combination of pain and hopelessness. Like the IMV, the 3ST indicates this pain is often psychological and results from aversive interpersonal experiences (e.g., conflict, social exclusion, loss) but may also extend beyond interpersonal contexts (e.g., chronic medical pain). Although some previous research has shown that these constructs are associated with suicidal behavior (King & Merchant, 2008; Whitlock et al., 2014), these theories propose that acquired capability for suicide primarily contributes to the transition to suicidal behavior. The acquired capability for suicide, a non-interpersonal risk factor, has been conceptualized as the capacity to enact lethal self-harm that arises through habituating to pain and reducing fear of death over time. Non-interpersonal factors (e.g., access to lethal means, impulsivity, genetic risk for high pain tolerance, suicidal intention) are thought to underlie acquired capability (Klonsky et al., 2018). Given that this review was focused on interpersonal factors, we did not examine acquired capability for suicide in the present review.

Several cross-theoretical interpersonal factors have also been implicated in the emergence of STBs, both inside and outside the context of the previously summarized theories. Broadly, negative interpersonal experiences (e.g., low connectedness, rejection, victimization, isolation) have been consistently shown to contribute to STBs among adolescents (King & Merchant, 2008; Whitlock et al., 2014). Adolescents who report more negative interpersonal experiences have been shown to report more frequent and/or more severe suicidal thoughts (King & Merchant, 2008; Whitlock et al., 2014). Conversely, adolescents who report more positive interpersonal experiences (e.g., high connectedness, social support) have been shown to report fewer and/or less severe STBs (King & Merchant, 2008; Whitlock et al., 2014). Interpersonal factors may operate as risk or protective factors depending on the level and/or circumstances. For example, social connectedness has been consistently shown to be a crucial interpersonal factor for STBs (Czyz et al., 2012) and is related to the perception that an individual has meaningful and reciprocal social relationships with others. An individual's perception of social connectedness may or may not reflect the number of social relationships the individual has. Low social connectedness has been shown to contribute to feelings of loneliness and subsequent STBs (Satici et al., 2016), whereas high social connectedness has been shown to protect against STBs. Relatedly, an individual may seek support from others or act on the desire for social support. Receiving and seeking social support are associated with STBs among adolescents (Cenkseven-Önder, 2018) and young adults (Hirsch & Barton, 2011). While successful attempts to elicit social support may reduce the risk for STBs, unsuccessful attempts to elicit social support may exacerbate the risk for STBs. This suggests that initial attempts to elicit social support may serve as a significant predictor of the onset of STBs. The present review also examined studies investigating how interpersonal factors outside of specific theoretical frameworks contribute to STBs in real time among young people.

Expanding our conceptualizations of interpersonal factors that contribute to STBs

Several other interpersonal factors have been shown to increase the risk for STBs that have not yet been incorporated into contemporary interpersonal theories. One set of interpersonal risk factors includes minority stressors. The Minority Stress Theory (MST) argues that individuals with historically marginalized and minoritized identities experience stigma-based stressors (i.e., minority stressors) within interpersonal contexts and that these stressors predict poor health outcomes (Brooks, 1981; Chang et al., 2022; Meyer, 2003). Minority stress can range from external stressors (e.g., victimization, discrimination, racism, rejection) to internalized stressors (e.g., internalized stigma, concealment of identity, negative expectations; Chang et al., 2022). The MST has been extended to models of psychopathology, such that minority stressors lead to psychopathology by interfering with interpersonal interactions, cognitive processes, and emotion regulation (Chang et al., 2022; Choukas-Bradley & Thoma, 2022). There is a need to incorporate several minority stressors into the conceptualization of interpersonal risk for suicide. For example, minoritized individuals' experiences with feeling as though they "let down" their family or being excluded by others due to their identity may contribute to perceived burdensomeness and thwarted belongingness, respectively (Chang et al., 2022; Choukas-Bradley & Thoma, 2022). Previous research demonstrates that experiences of rejection and victimization related to an individual's minoritized identity are associated with greater STBs at the between-person level (Chang et al., 2022). Additionally, the social safety model has extended the MST and argues that social safety (e.g., social connection, social inclusion, social protection, social acceptance) plays a fundamental and unique role beyond cumulative exposure to minority stressors (Diamond & Alley, 2022). Social safety is a key source of safety, and the need to belong is a fundamental, evolutionarily-based human motivation (Diamond & Alley, 2022).

https://doi.org/10.1017/S0954579424001810 Published online by Cambridge University Press

Table 1. Search string of the review for each component of the present review

Component	Search string
Suicidal thoughts and behaviors	suicid* OR "attempt suicide" OR "passive death wish" OR PDW or STB*
Adolescence and young adulthood	adolesc* OR youth* OR teen* OR "high school" OR high-school* OR "middle school" OR middle-school* OR boy OR girl OR undergrad* OR college* OR emerging adult* OR young-adult*
Interpersonal risk factors	interpers* OR social* OR relation* OR "interpersonal theory of suicide" OR IPTS OR "Three step theory of suicide" OR 3ST OR "Integrated motivational volition theory" OR IMV OR connect* OR disconnect* OR lonel* OR reject* OR victimi* OR belong* OR burden* OR isolate* OR alone OR bully* OR conflict* OR support OR "social pain" OR cyber* OR discriminat* OR harass* OR "interpersonal stressor"
Intensive longitudinal methods	"intensive sampling" OR intensive-samp* OR "intensive longitudinal" OR intensive OR "ecological momentary assessment" OR EMA OR ecological OR "experience sampling" OR experience-samp* OR "daily diary" OR diary OR daily OR timeline OR "within person" OR within-person

Social safety is not dependent on direct exposure to minority stressors. For example, concealment of identity, isolation, and chronic wariness of others may help minoritized individuals avoid direct exposure to minority stressors in the short term. However, these processes can become psychologically and biologically detrimental in the long term (Diamond & Alley, 2022). Therefore, both direct exposure to minority stressors (e.g., stigma, discrimination) and insufficient access to social safety may be important interpersonal processes that contribute to STBs among young minoritized individuals. The present study included concepts related to these processes in the included interpersonal factors relevant to STBs among young people.

The present review

The present review summarizes the growing body of literature examining both within-person and between-person effects of interpersonal factors on STBs among adolescents and young adults. It also summarizes intensive longitudinal methodological approaches used to study the dynamic associations between interpersonal factors and STBs. Furthermore, an integrated model is described based on significant within-person effects of interpersonal factors on STBs. Improving our understanding of the dynamic associations between interpersonal factors and STBs allows us to better identify specific *times* and *contexts* during which STBs are elevated among young people.

Methods

Search strategy

The present narrative review relied on the Population Intervention Comparison Outcome Study Design Strategy (PICO; Schardt et al., 2007) to formulate our research question and eligibility criteria. The target population was individuals with a mean age between 11 and 30 years old to capture adolescence (ages 11–17; minimum age of 11) and young adulthood (ages 18–30; maximum age of 30). The present review searched for studies examining theoretical and cross-theoretical interpersonal constructs. STBs were the outcome of interest in the present review. For study design, the present review only focused on studies that utilized the following intensive longitudinal designs: EMA/ESM, daily diary, and timeline follow-back and/or longitudinal studies with at least three timepoints. Studies were retrieved using the following databases: MEDLINE (via PubMed), PsychInfo, and Google Scholar. Table 1 lists the keywords combined by Boolean operators that were searched for in titles, abstracts, and keywords of database items published up to September 2023. A small number of additional items were retrieved by hand-searching the reference lists of the already included manuscript.

Study inclusion criteria

In accordance with the PICO protocol, the predefined inclusion criteria for database items were as follows: (a) studies with at least one assessment of STBs (beyond non-suicidal self-injurious behaviors) analyzed as an outcome; (b) studies with at least one assessment of a theoretical (i.e., IPTS, IMV, 3ST) or cross-theoretical interpersonal construct analyzed at the within-person level; (c) studies with a mean and range sample age between 11 and 30; (d) studies with English versions of the text available; (e) studies published in peer-reviewed journals; and (f) studies published up to September 2023. If studies reported between-person-level analyses, these results were included in our review summary. Theoretical interpersonal factors were required to be one of the constructs from the following theories: IPTS (perceived burdensomeness, thwarted belongingness), IMV (defeat, entrapment), 3ST (pain, connectedness), and MST minority stressors (e.g., discrimination or harassment based on identity; see Appendix Table 1). Although hopelessness is not strictly interpersonal, the interpersonal theories included in the present review position hopelessness as a primary and moderating factor critical for interpersonal risk for suicide. Only at high levels of hopelessness are several theoretical interpersonal factors (e.g., perceived burdensomeness, thwarted belongingness, pain, defeat) thought to confer risk for suicide. Therefore, the present review will include studies that examine hopelessness among adolescents and young adults. Constructs related to the acquired capability for suicide (e.g., substance use, risk-taking, self-harm) are not summarized in the present review as such factors are thought to be primarily related to non-interpersonal constructs (e.g., pain tolerance, access to lethal means). Cross-theoretical interpersonal factors included connectedness, loneliness, rejection, victimization, social support, social pain, and social isolation (see Appendix Table 1). No limits were placed on the included studies' samples based on gender, sex assigned at birth, race, ethnicity, or mental health diagnoses. The selection procedure is summarized in Figure 1.

Data extraction and synthesis

Once papers were identified, data were extracted from all studies that met inclusion criteria. The following data were extracted: authors; publication date; country; sample type (e.g., adolescent, young adults); demographic information of sample (e.g., age, race, gender, sex assigned at birth); STBs assessed; interpersonal constructs assessed; and results and conclusions. Given the small sample size of the included studies ($n = 30$), data synthesis is reported in a narrative format.

https://doi.org/10.1017/S0954579424001810 Published online by Cambridge University Press

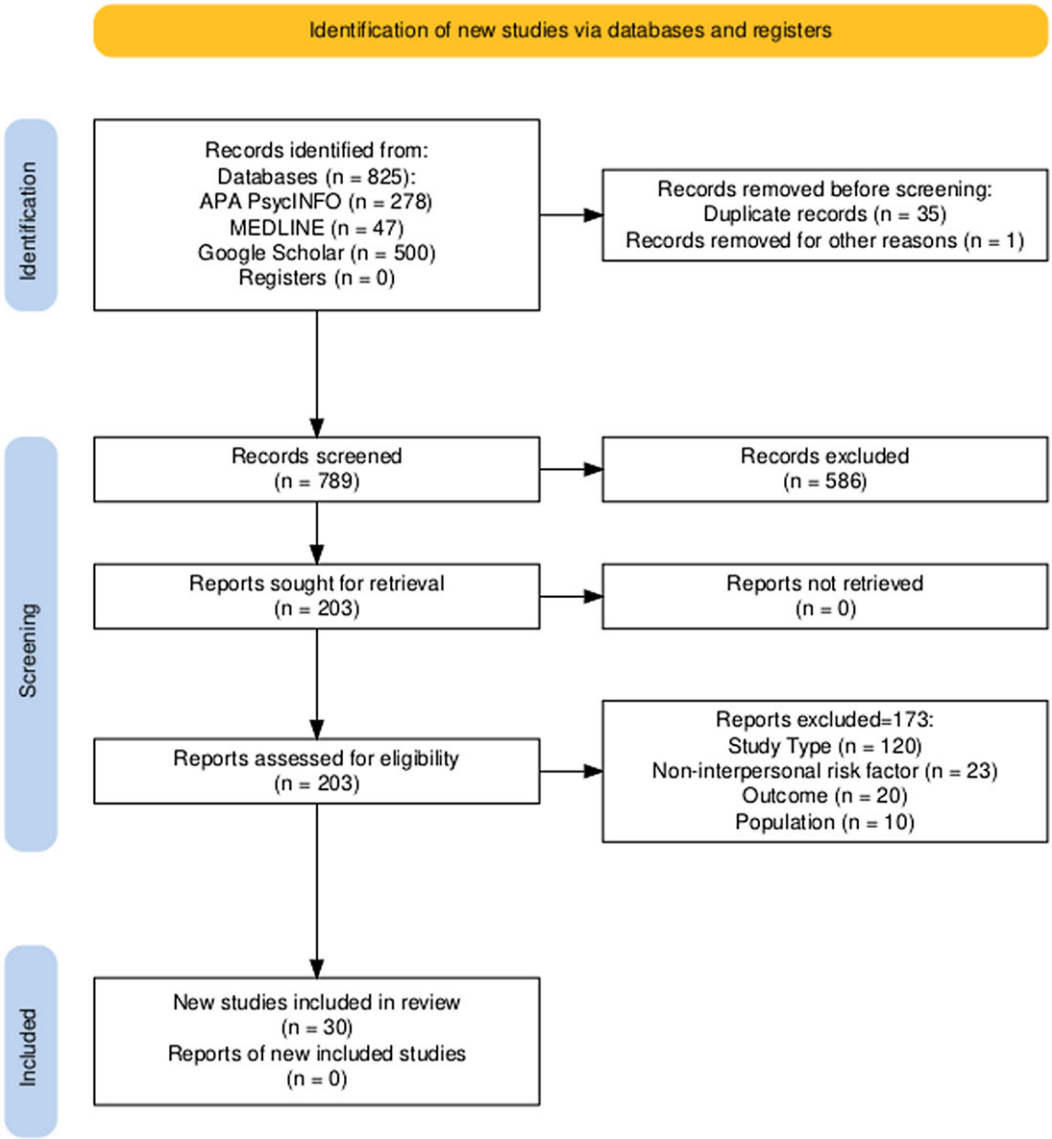

Figure 1. Screening and eligibility protocol used in the present review.

Results

Results of the study search

The search of the databases in September 2023 identified 825 citations and 789 after eliminating duplicates (see Figure 1). After the title and abstract screening, 203 articles remained for the full-text screening. Most titles and abstracts were excluded due to not using an intensive longitudinal design, not assessing an interpersonal factor, and/or not assessing STBs as an outcome (see Figure 1). Of the 203 full texts, 173 were excluded after full-text screening due to not using an intensive longitudinal design, not assessing an interpersonal factor, and/or not assessing STBs as an outcome (see Figure 1). The final sample for the present review was comprised of 30 articles.

Study characteristics

Sample characteristics

Sample sizes ranged from 27 to 1465 (mean = 144, median = 74). More studies were conducted on adolescents (66%, $n = 20$) compared to young adults (43%, $n = 13$), although three studies included individuals from both developmental periods (10%, $n = 3$). Across adolescent samples, the mean age was 15.52; across adult samples, the mean age was 22.56. Two young adult studies were included that met the mean age criteria but exceeded the maximum age criteria cutoff (Aadahl et al., 2021; Wolford-Clevenger et al., 2020). We retained these studies in the present review, as they were the only intensive longitudinal studies that examined IMV and 3ST constructs. Samples were predominantly comprised of female participants who identified as White (see Table 2). It should be noted that most studies did not distinguish between sex assigned at birth and gender identity. Participants were often recruited from high-risk settings (e.g., inpatient hospitalization programs, emergency departments). Inclusion criteria were typically based on recent (i.e., past year) history of STBs to ensure that a sufficient number of STBs would be captured during the follow-up period of the studies.

Intensive longitudinal methods

Table 2 lists the intensive longitudinal methods used in the included studies. Studies utilized EMA (43%, $n = 13$), daily diary

https://doi.org/10.1017/S0954579424001810 Published online by Cambridge University Press

Table 2. Summary of studies included in the present review ($n = 30$)

Reference	Sample	Study design	Follow-up period	STB assessed	Interpersonal risk factor assessed	Adherence	Finding
Aadahl et al. (2021)	$n = 27$ emerging adults *M*age = 34.2 *Gender*: 66% female; 34% male *Race/ethnicity*: 93% White British; 7% White Other	EMA	7 days	Suicidal thoughts	IMV constructs (defeat, entrapment, hopelessness)	49%	Significant within-person and between-person associations between hopelessness, defeat, and same-timepoint ST. Only significant between-person association between entrapment and same-timepoint ST.
Abbott et al. (2021)	$n = 129$ adolescents *M*age = 14.87 *Gender:* 81.9% female; *did not report other gender identities* *Race/ethnicity:* 49.7% Black; 28.7% White; 21.6% American Indian/Pacific Islander/biracial/Other	RCT	16 weeks	Suicidal thoughts	IPTS constructs (perceived burdensomeness, thwarted belongingness)	80%	During the first half of treatment, there were significant within-person and cross-lagged between-person associations between perceived burdensomeness and ST. During the second half of treatment, there were significant within-person associations between perceived burdensomeness, thwarted belongingness, and ST. Perceived burdensomeness, but not thwarted belongingness, was also associated with ST at the between-person level.
Al-Dajani and Czyz (2022)	$n = 78$ adolescents *M*age = 15.19 *Gender:* 69% female; 31% male *Race/ethnicity:* 83.3% White; 6.4% African American/Black, 5.1% Asian, 5.1% American Indian/Alaska Native; 1.3% Native Hawaiian/Other Pacific Islander; 2.6% Other	Daily diary	28 days	Suicidal thoughts; suicidal urges	Social support seeking (parent and peer)	72.4%	Significant between-person, but not within-person, association between seeking personal support and next-timepoint suicidal thoughts.
Al-Dajani et al. (2022)	$n = 78$ adolescents *M*age = 16.41 *Gender:* 67.9% female; 24.41% male; 7.69% transgender or nonbinary *Race/ethnicity:* 83.3% White; 6.4% African American/Black; 5.1% Asian; 1.3% American Indian/Alaska Native; 1.3% Native Hawaiian/Other Pacific Islander; 2.6% Other	Daily diary	30 days	Suicidal urges	IPTS constructs (perceived burdensomeness, thwarted belongingness)	72.36%	Significant within-person associations between perceived burdensomeness, thwarted belongingness, and same-timepoint ST. Only significant within-person association between perceived burdensomeness was significantly associated with next-timepoint ST. Significant within-person and between-person interactions between baseline perceived burdensomeness and daily thwarted belongingness predicting same-timepoint ST.
Auerbach et al. (2023)	$n = 103$ adolescents *M*age = 16.41 *Gender:* 82.6% female; 17.4% male *Race/ethnicity:* 58% White; 12% African American/Black; 8% Asian; 1% Native American; 10% More than 1 race; 11% unknown/not reported	Weekly diary and passive sensing	6 months	Suicidal thoughts; suicidal behaviors	Psychological pain; perceived burdensomeness	54.7%	Significant within-person changes in ST. Significant between-person associations between psychological pain, perceived burdensomeness, and persistently high trajectories of ST.
Coppersmith et al. (2019)	$n = 53$ emerging adults *M*age = 23.52 *Gender:* 77.1% female; 22.9% male *Race/ethnicity:* 75% White; 8.3% Asian; 1.8% African American/Black; 14.9% more than one race/other	Daily diary	28 days	Suicidal thoughts	IPTS constructs (perceived burdensomeness, thwarted belongingness); perceived social support	67%	Significant within-person associations between perceived social support, perceived burdensomeness, thwarted belongingness, and same-timepoint ST. These associations extended to next-timepoint ST in models that did not include same-timepoint ST as a covariate.

Czyz et al. (2019)	$n = 34$ adolescents *M*age = 15.5 *Gender:* 76.5% female; 23.5% male *Race/ethnicity:* 85.3% White; 8.8% African American/Black; 8.8% Asian; 5.9% Hispanic; 2.9% American Indian or Alaskan Native; 2.9% Native Hawaiian or Other Pacific Islander	Daily diary	28 days	Suicidal thoughts; suicidal urges	IPTS constructs (perceived burdensomeness, thwarted belongingness); 3ST constructs (hopelessness, connectedness)	69.4%	Significant within-person associations between perceived burdensomeness, thwarted belongingness/connectedness hopelessness, and same-timepoint ST. No significant within-person associations between single constructs and next-timepoint ST. Significant within-person two-way interactions between all constructs predicting same-timepoint ST. Significant within-person interactions between perceived burdensomeness and thwarted belongingness and three-way interaction between all constructs predicting next-timepoint ST.
Czyz et al. (2021)	$n = 32$ adolescents *M*age = 15.4 *Gender:* 75% female; 25% male *Race/ethnicity:* 84.4% White; 9.4% African American/Black; 9.4% Asian; 6.3% Hispanic; 3.1% American Indian/Alaska Native; 3.1% Native Hawaiian/Other Pacific Islander	Daily diary	28 days	Suicidal thoughts; self-efficacy to refrain from suicidal behavior; suicidal behavior	IPTS constructs (perceived burdensomeness, thwarted belongingness); 3ST constructs (hopelessness, connectedness, psychological pain)	76.3%	Models accounting for within-person and between-person variance in hopelessness and self-efficacy to refrain from suicidal behaviors performed the best at predicting same-timepoint ST. Significant between-person association between psychological pain and same-timepoint ST.
Czyz et al. (2021)	$n = 78$ adolescents *M*age = 15.19 *Gender:* 67.9% female; 32.1% *Race/ethnicity:* 83.3% White; 6.4% African American/Black; 5.1% Asian; 5.1% American Indian/Alaska Native; 1.3% Native Hawaiian/Other Pacific Islander	Daily diary	28 days	Suicidal thoughts; self-efficacy to refrain from suicidal behavior; suicidal behavior	IPTS constructs (perceived burdensomeness, thwarted belongingness); 3ST constructs (hopelessness, connectedness, psychological pain)	72.4%	Models accounting for within-person and between-person variance in hopelessness, burdensomeness, and self-efficacy to refrain from suicidal behavior performed the best at predicting same-timepoint and next-timepoint ST.
Czyz et al. (2021)	$n = 80$ adolescents *M*age = 15.16 *Gender:* 67.5% female; 32.5% male *Race/ethnicity:* 83.8% White; 6.3% African American/Black; 5% Asian; 5% American Indian/Alaskan Native; 1.3% Native Hawaiian/Other Pacific Islander	Daily diary and longitudinal follow-ups	28 days; 3 months	Suicidal thoughts; self-efficacy to refrain from suicidal behavior; suicidal behavior; safety plan use	Personal social support seeking (parent and peer); Professional social support seeking (mental health care provider)	72.4%	Adolescents who received a safety plan intervention during hospitalization and text support following discharge showed no significant within-person and between-person associations between using personal support to cope and same-timepoint ST. However, these adolescents showed a significant negative within-person association with professional support seeking and suicidal thoughts.
Czyz et al. (2022)	Sample 1 $n = 61$ adolescents *M*age = 15.16 *Gender:* 68.9% female; 31.1% male *Race/ethnicity:* 75.4% White; 16.4% African American/Black; 4.9% Asian; 1.6% American Indian Alaskan Native; 9.8% Other Sample 2 $n = 78$ adolescents *M*age = 15.19 *Gender:* 67.9% female; 32.1% *Race/ethnicity:* 83.3% White; 6.4% African American/Black; 5.1% Asian; 5.1% American Indian Alaskan Native; 1.3% Native Hawaiian/Other Pacific Islander; 2.6% Other	EMA	10 days; 28 days	Suicidal thoughts; self-efficacy to refrain from suicidal behavior; suicidal behavior	Hopelessness	72.4%	Significant within-person changes in ST, such that adolescents with persistently high ST reported greater variability in ST compared to the other trajectories. Significant between-person association between hopelessness and persistently high trajectories of ST.

(*Continued*)

Table 2. (*Continued*)

Reference	Sample	Study design	Follow-up period	STB assessed	Interpersonal risk factor assessed	Adherence	Finding
Defayette et al. (2023)	$n = 42$ emerging adults *M*age = 19.55 *Gender:* 73.8% female; 16.7% male *Race/ethnicity:* 45.2% White; 16.7% African American/Black; 16.7% Asian; 14.3% multiracial; 7.1% Other	Daily diary	28 days	Suicidal thoughts; suicidal behaviors	Peer exclusion; number of negative peer events	71.84%	Marginally significant within-person association between peer exclusion and same-timepoint ST. Significant between-person associations between peer exclusion and ST. No significant within-person or between-person associations between the number of negative peer events and same-timepoint or next-timepoint ST.
Fortgang et al. (2021)	$n = 31$ adolescents *M*age = 15.25 *Gender:* 61.29% female; 35.48% male; 3.23% nonbinary *Race/ethnicity:* 87.10% White; 3.23% African American/Black; 0% Asian; 9.68% multiracial/other	EMA and passive sensing	6 months	Suicidal urges; suicidal intent	Perceived social isolation; objective social isolation (passively collected via GPS data)	–	Prior to the COVID-19 pandemic, there was a significant between-person association between objective social isolation and same-timepoint ST. There were no significant within-person associations between perceived social isolation, objective social isolation, and ST prior to and during the COVID-19 pandemic.
Glenn et al. (2022)	$n = 48$ adolescents *M*age = 14.96 *Gender:* 64.6% female; 16.7% male; 18.8% nonbinary *Race/ethnicity:* 77.1% White; 8.3% African American/Black; 2.1% American Indian/Alaskan Native; 10.4% multiracial; 13.6% Hispanic/Latinx	EMA	28 days	Suicidal desire; suicidal intent; ability to keep self safe; desire for life	Thwarted belongingness/connectedness (family, peer, and romantic); Negative interpersonal events (family, peer, and romantic contexts)	75%	Significant within-person associations between thwarted belongingness/connectedness (family and peers) and next-timepoint ST. Significant within-person association between negative interpersonal events and same-timepoint ST through thwarted belongingness/connectedness with family only.
Hamilton et al. (2023)	$n = 59$ adolescents and emerging adults *M*age = 16.59 *Gender:* 74.58% female; 25.42% male *Race/ethnicity:* 76.27% White; 6.78% African American/Black; 10.17% Asian; 6.78% Other/not specified	EMA	3 months	Suicidal thoughts	Negative and positive affect in response to interpersonal events	82.5%	Significant within-person association between negative affect reactivity and same-timepoint ST. No significant within-person association between positive affect reactivity and same-timepoint ST. Both negative and positive affect reactivity accounted for the association between sleep variability and same-timepoint ST at the within-person level.
Jacobucci et al. (2022)	$n = 35$ emerging adults *M*age = 25.88 *Gender:* 62.9% female; 20% male; 14.3% transgender/other *Race/ethnicity:* 68.6% White; 5.7% Black; 11.4% Asian; 11.5% Multiracial/other; 2.9% preferred not to answer	EMA	30 months	Suicidal thoughts	IPTS constructs (perceived burdensomeness, thwarted belongingness)	60.6%	Significant within-person associations between perceived burdensomeness, thwarted belongingness, and same-timepoint ST. No significant within-person associations between perceived burdensomeness, thwarted belongingness, their interaction, and next-timepoint ST controlling for same-timepoint ST.
Janackovski et al. (2022)	$n = 226$ adolescents and emerging adults in Australian *M*age = 16.61 *Gender:* 69.3% female; 28.5% male; 0.3% nonbinary *Race/ethnicity:* 4.5% Aboriginal and/or Torres Strait Islander; 7.2% culturally and linguistically diverse background	Longitudinal intervention study	2 years	Suicidal thoughts	IPTS constructs (perceived burdensomeness, thwarted belongingness); hopelessness	–	Significant within-person associations between perceived burdensomeness, thwarted belongingness, hopelessness, and next-timepoint ST. Significant bidirectional within-person associations between perceived burdensomeness and next-timepoint ST.
Kennard et al. (2018)	$n = 66$ adolescents *M*age = 15.1 *Gender:* 89.4% female; 10.6% male *Race/ethnicity:* 77.3% White; *did not report race/ethnicity of remaining sample*	Daily diary and longitudinal follow-ups	2 months	Suicidal thoughts; suicidal behaviors	Perceived social support	–	There were significant within-person changes in social support from families over the course of treatment. There was no significant within-person association between perceived social support from family and next-timepoint ST.

Kleiman et al., 2017)	Sample 1: *n* = 54 emerging adults *Mage* = 23.4 *Gender:* 79.6% female; 20.4% male *Race/ethnicity:* 72% European descent; 7.4% Hispanic; 7.4% Asian; 13.2% another race Sample 2: *Sample was outside of the criteria of included studies*	EMA	28 days	Suicidal thoughts; suicidal intent, ability to resist suicidal urges	IPTS constructs (perceived burdensomeness, thwarted belongingness); hopelessness	62.75%	Significant within-person associations between perceived burdensomeness, thwarted belongingness, hopelessness, and same-timepoint ST. Significant within-person associations between perceived burdensomeness, hopelessness, and next-timepoint ST, although these associations fell to non-significant when controlling for same-timepoint ST.
Koenig et al. (2021)	*n* = 73 adolescents *Mage* = 15.48 *Gender:* 100% female *Race/ethnicity: Did not report race/ethnicity of sample*	EMA	3 days	Self-injurious behavior (did not specify suicidal or non-suicidal)	Attachment with peers, mothers, and fathers	Minimum 50%	Significant within-person association between attachment with peers and next-timepoint self-injury. Significant between-person association between attachment with mothers and next-timepoint self-injury.
Mereish et al. (2023)	*n* = 103 adolescents identifying as SGM *Mage* = 16.45 *Gender:* 35% female; 23% cisgender male; 17 and transgender male; 16% genderqueer; 2% transgender female; 7% Other gender identity *Race/ethnicity:* 69% White; 14% multiracial; 8% African American/Black; 4% Asian; 2% American Indian/Alaska Native; 2% Other	EMA	28 days	Suicidal thoughts; suicidal behaviors	Minority stressors (external and internal)	76%	Significant within-person and between-person associations between all minority stressors and same-timepoint ST. Negative affect, positive affect, and emotion dysregulation partially mediated these associations.
Mournet et al. (2022)	*n* = 74 emerging adults *Mage* = 19.38 *Gender:* 70.27% cisgender female; 25.68% cisgender male; 2.70% transgender female; 1.35% nonbinary; 1.35% chose not to disclose *Race/ethnicity:* 50% Asian; 31.08% White; 5.40% African American/Black; 1.35% American Indian/Alaskan Native; 12.16% multiracial/choose not to disclose	EMA	8 weeks	Suicidal thoughts	Social support seeking; IPTS (perceived burdensomeness; thwarted belongingness)	69.5%	Significant within-person associations between support seeking and same-timepoint ST. Significant within-person interaction between support seeking and perceived burdensomeness predicting same-timepoint ST. No significant within-person associations between any construct and next-timepoint ST.
Nock et al. (2009)	*n* = 30 adolescents and emerging adults *Mage* = 17.3 *Gender:* 86.7% female; 13.3% male *Race/ethnicity:* 86.7% European American; 6.7% Hispanic; 6.7% other race	EMA	14 days	Suicidal thoughts; suicidal behaviors	Social context in which STBs occurred	83.3%	There were significant within-person changes in ST. There were also significant between-person, but not within-person, associations between being alone, arguments, feeling pressured, and same-timepoint ST.
Rogers (2023)	*n* = 237 emerging adults *Mage* = 27.12 *Gender:* 61.6% cisgender female; 16% gender nonbinary/nonconforming; 8.9% transgender male; 6.8% cisgender male; 1.7% transgender female; 0.8% other *Race/ethnicity:* 86.9% White/European American; 3.8% African American/Black; 7.2% Hispanic/Latino; 3.8% Asian; 1.3% Pacific Islander; 1.7% American Indian/Native American; 0.4% Other	EMA	14 days	Suicidal behaviors	Hopelessness; IPTS constructs (perceived burdensomeness; thwarted belongingness); Life event stress	68.8%	Across univariate models, significant prompt-level within-person associations between hopelessness, perceived burdensomeness, thwarted belongingness, life event stress, and same-timepoint SB. Significant participant-level between-person association between hopelessness and same-timepoint SB. In the multivariate model, there is a significant prompt-level within-person association between life event stress and same-timepoint SB. No significant associations between any predictor and next-timepoint SB.

(*Continued*)

Table 2. (*Continued*)

Reference	Sample	Study design	Follow-up period	STB assessed	Interpersonal risk factor assessed	Adherence	Finding
Schwartz-Mette et al. (2023)	*n* = 362 adolescents *M*age = 15.01 *Gender:* 63.4% female; 36.6% male *Race/ethnicity:* 76.4% White; *did not report race/ethnicity of remaining sample*	EMA	4 months	Suicidal thoughts	Loneliness	–	Significant within-person and between-person associations between loneliness and ST during the COVID-19 pandemic.
Sewall et al. (2021)	*n* = 386 adolescents with a bipolar disorder *M*age = 14.49 *Gender:* 46.89% female; 53.11% male *Race/ethnicity:* 82.12% white; *did not report race/ethnicity of remaining sample*	Timeline	6 years	Suicidal thoughts; suicidal behaviors	Relationship quality (family and peer)	–	Significant within-person association between relationship quality and next-timepoint ST. Gender moderated this association, such that males showed this association with peer relationship quality whereas females showed this association with family relationship quality. Significant within-person association between relationship quality with parents, but not peers, and next-timepoint SB.
Victor et al. (2019)	*n* = 62 emerging adults *M*age = 22.0 *Gender:* 100% female *Race/ethnicity:* 69.35% non-Hispanic African American; 24.19% non-Hispanic White; 1.61% Hispanic African American; 4.84% multiracial/biracial	EMA	21 days	Suicidal urges	Rejection; criticism; internalizing negative affect (ashamed, guilty, scared, lonely, sad); externalizing negative affect (hostile, irritable, angry at others, annoyed, mad)	85%	Significant within-person associations between rejection, criticism, internalizing negative affect, externalizing negative affect, and next-timepoint ST. Significant between-person associations between internalizing negative affect, externalizing negative affect, and next-timepoint ST. Internalizing negative affect partially mediated within-person associations between rejection, criticism, and next-timepoint ST.
Wolford-Clevenger et al. (2020)	*n* = 206 emerging adults *M*age = 19.05 *Gender:* 73% female; 27% male *Race/ethnicity:* 82.4% White; *did not report race/ethnicity of remaining sample*	Daily diary	90 days	Suicidal thoughts; suicidal behaviors	IPTS constructs (perceived burdensomeness, thwarted belongingness); hopelessness	49% had 1 month of data	Significant within-person associations between perceived burdensomeness, thwarted belongingness, and same-timepoint passive ST. Significant within-person associations between perceived burdensomeness, hopelessness, three-way interaction between all IPTS constructs, and same-timepoint active ST. Significant between-person associations between perceived burdensomeness, thwarted belongingness, hopelessness, ST, and SB.
Wolford-Clevenger et al. (2021)	*n* = 38 emerging adults identifying as SGM *M*age = 28.63 *Gender:* 36.8% female; 47.4% male; 39.5% genderqueer *Race/ethnicity:* 84.2% White/non-Hispanic; 5.3% African American/Black; 7.9% multiracial; 2.6% other race	Daily diary	30 days	Suicidal thoughts; suicidal behaviors	3ST constructs (hopelessness; connectedness; psychological pain)	73.3%	Significant within-person associations between hopelessness, pain, their interaction, and same-timepoint ST.
Zhu et al. (2022)	*n* = 1465 adolescents from Switzerland Data collected at ages 13, 15, 17, and 20 *Gender:* 52% male; 48% female *Race/ethnicity:* 90% born in Switzerland; *did not report race/ethnicity of sample*	Longitudinal study	7 years	Suicidal thoughts; suicidal behaviors	Bullying victimization	–	Significant within-person associations between victimization and same-timepoint and next-timepoint ST.

Note. EMA = ecological momentary assessment; ST = suicidal thoughts; SB = suicidal behavior; IPTS = Interpersonal Theory of Suicide; 3ST = Three-Step Theory of Suicide; IMV = Integrated Motivational-Volition Theory of Suicide; MST = Minority Stress Theory.

(40%, $n = 12$), and timeline (13%, $n = 4$) methods. The follow-up periods ranged from 3 to 224 days (mean = 50, median = 28). The four timeline studies included in the present review had at least three timepoints that spanned between less than 1 year and 6 years (Abbott et al., 2021; Janackovski et al., 2022; Sewall & Wright, 2021; Zhu et al., 2022). The total number of timepoints across the follow-up periods ranged from 3 to 17,224 (mean = 3,309, median = 2,030). Studies used a variety of sampling designs, including fixed sampling (63%, $n = 19$), random sampling (46%, $n = 14$), and event-contingent sampling (13%, $n = 4$). Participant completion rates of intensive longitudinal assessments ranged from 49% to 85% (mean = 71%, median = 72%).

STBs and interpersonal factor measures

STBs

All studies included an intensive longitudinal assessment of STBs (for more details, see Table 2). Studies assessed more specific dimensions of suicidal thoughts, including the desire to be dead (passive suicidal thoughts; 16%, $n = 5$), the desire to kill oneself (active suicidal thoughts; 90%, $n = 27$), intent to kill oneself (suicidal intent; 26%, $n = 8$), the ability to resist the urge for suicide (16%, $n = 5$), and the desire for life (6%, $n = 2$). Fewer studies assessed suicidal behavior (46%, $n = 14$) or self-injurious behaviors that were not specified as non-suicidal behaviors (3%, $n = 1$). The number of items used to assess STBs ranged from 1 to 30 (mean = 4.87, median = 3). Intensity (72%, $n = 23$) and presence/absence (60%, $n = 18$) of STBs since the previous assessment timepoint were typically assessed. Most studies assessed STBs using a Likert scale (73%, $n = 22$) and/or binary items (60%, $n = 18$). Most studies also assessed baseline STBs (70%, $n = 21$). Items used to assess STBs were adapted from the following questionnaire measures: Columbia Suicide Severity Rating Scale (Posner et al., 2011), Suicidal Thought and Self-Injurious Behavior Interview (Nock et al., 2007), Beck Scale for Suicidal Ideation (Beck et al., 1979), Suicidal Ideation Questionnaire – Junior Version (Reynolds & Mazza, 1999), Self-Assessed Expectations of Suicide Risk Scale (Czyz et al., 2016), Efficacy to Cope with Suicidal Thoughts and Urges Scale (Czyz et al., 2016), Modified Scale for Suicidal Ideation (Miller et al., 1986), Self-Injurious/Suicidal Behavior Scale in the Longitudinal Follow-up Evaluation (Goldstein et al., 2012), Paykel Suicide Scale (Paykel et al., 1974).

Interpersonal factors

All studies included an intensive longitudinal assessment of an interpersonal construct contained in the IPTS (56%, $n = 18$), IMV (3%, $n = 1$), 3ST (41%, $n = 13$), MST (3%, $n = 1$), or cut across these theoretical frameworks (44%, $n = 14$; for more details, see Table 2). Within the theoretical interpersonal factors, IPTS constructs were the most widely studied. Perceived burdensomeness was typically assessed directly (44%, $n = 14$) by asking young people to rate how much they felt they were a burden to others. However, thwarted belongingness (53%, $n = 17$) was assessed in several different ways, either by directly asking young people how much they felt as though they belonged (9%, $n = 3$) or indirectly assessing loneliness (16%, $n = 5$) or connectedness (28%, $n = 9$). Studies often used single-item ratings of these constructs adapted from the Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2012). Only one study (Aadahl et al., 2021) examined IMV constructs and directly assessed defeat and entrapment using the Defeat and Entrapment Scales (Gilbert & Allan, 1998). Only one study examined 3ST constructs (Wolford-Clevenger et al., 2020). This study used single-item ratings to assess pain and hopelessness and two items to assess connectedness via the INQ (Van Orden et al., 2012). However, several studies broadly assessed the key 3ST constructs of hopelessness (28%, $n = 9$), connectedness (28%, $n = 9$), and pain (16%, $n = 5$). Additionally, only one study examined minority stressors using items adapted from the Everyday Identity Stress Scale (Mereish et al., 2023).

Studies included in the present review focused on the following cross-theoretical constructs: social support (22%, $n = 7$), social isolation (6%, $n = 2$), negative and positive interpersonal experiences (25%, $n = 8$), aspects of interpersonal experiences (affect reactivity 16%, $n = 5$; specific interpersonal experiences 6%, $n = 2$), and relationship quality (3%, $n = 1$). Studies examining social support distinguished two dimensions of social support from others: *seeking* support (13%, $n = 4$) and *receiving* support (6%, $n = 2$). Studies examining social isolation typically used single-item ratings to directly assess feelings of isolation (3%, $n = 1$) or indirectly assess experiences associated with social isolation (e.g., time spent alone, few social interactions; 6%, $n = 2$). It should be noted that although social isolation often co-occurs with loneliness, social isolation could occur independently from loneliness. Most studies assessed the presence/absence and subsequent affective states of interpersonal experiences since the previous timepoint. Studies often used multiple single-item negative and positive affect ratings to assess affective reactivity to interpersonal experiences (16%, $n = 5$). Finally, only one study assessed relationship quality across family and peer relationships using the Range of Impaired Functioning Tool of the Longitudinal Interval Follow-up Evaluation (Keller et al., 1987). The overall number of items used to assess interpersonal factors ranged from 1 to 32 (mean = 6.32; median = 4).

Study findings

Characterizing STBs

Suicidal thoughts were reported by 12%–87.41% of individuals across all timepoints (adolescent median = 71%; young adult median = 62%). Suicidal thoughts were reported on 0.7%–92% of all timepoints (adolescent frequency median = 32%; young adult frequency median = 10%). Suicidal behaviors were endorsed by 0%–31% of individuals (adolescent median = 27.4%; young adult median = 8%) and only 0%–0.4% on timepoints (adolescent frequency median = not reported; young adult frequency median = 0.2%). There was considerable within-person variability in STBs, as 32%–95% (adolescent median = 60%; adult median = 64%) of the variance in STBs was due to within-person effects compared to between-person effects. Two studies demonstrated that individuals with greater within-person variability in STBs also generally reported greater overall mean levels of STBs (Kleiman et al., 2017; Czyz et al., 2021). Consistent with previous reviews (e.g., Auerbach et al., 2023; Kivelä et al., 2022), these findings demonstrate that STBs fluctuate rapidly across short spans of time and that a subgroup of young people with elevated overall levels of STBs are more likely to experience rapid changes in STBs.

Theoretic interpersonal factors of suicidal thoughts

Studies examining theoretical interpersonal factors (i.e., IPTS, IMV, 3ST, MST) demonstrated significant within-person variability among interpersonal factors. Across all theoretical interpersonal factors, 40%–73% (adolescent median = 41%–60%; adult median = 49%–73%) of the total variance was due to within-person effects compared to between-person effects. Among studies examining the IPTS constructs, there was a consistent

https://doi.org/10.1017/S0954579424001810 Published online by Cambridge University Press

within-person association between perceived burdensomeness and same-timepoint suicidal thoughts ($n = 7$; Abbott et al., 2021; Coppersmith et al., 2019; Czyz et al., 2019; Czyz et al., 2021; Glenn et al., 2020; Jacobucci et al., 2022; Kleiman et al., 2017; Wolford-Clevenger et al., 2020, 2021). Individuals who reported greater perceived burdensomeness compared to their average reported more frequent or intense suicidal thoughts at that same timepoint. Slightly fewer studies demonstrated a significant positive within-person association between perceived burdensomeness and next-timepoint suicidal thoughts (next survey within day = 2; Abbott et al., 2021; Kleiman et al., 2017; next daily diary survey = 3; Al-Dajani et al., 2022; Al-Dajani & Czyz, 2022; Coppersmith et al., 2019; next study timepoint = 1; Janackovski et al., 2022). A similar pattern emerged with thwarted belongingness, such that studies found more within-person associations between thwarted belongingness and same-timepoint suicidal thoughts ($n = 7$; Abbott et al., 2021; Al-Dajani & Czyz, 2022; Coppersmith et al., 2019; Czyz et al., 2019; Jacobucci et al., 2022; Kleiman et al., 2017; Wolford-Clevenger et al., 2021) compared to next-timepoint suicidal thoughts (next survey within day = 1; Glenn et al., 2022; next daily diary survey = 1; Coppersmith et al., 2019; next study timepoint = 1; Janackovski et al., 2022;). Within-person associations between perceived burdensomeness, thwarted belongingness, and next-timepoint suicidal thoughts dropped to non-significant when controlling for previous timepoint suicidal thoughts ($n = 2$; Coppersmith et al., 2019; Janackovski et al., 2022). Contradictory to the IPTS framework, only two studies (Al-Dajani & Czyz, 2022; Czyz et al., 2019) out of all IPTS studies ($n = 18$) demonstrated a significant within-person interaction between perceived burdensomeness and thwarted belongingness predicting same-timepoint (Czyz et al., 2019) and next-day (Al-Dajani & Czyz, 2022) suicidal thoughts. In line with the IPTS model, two studies found a significant within-person three-way interaction between perceived burdensomeness, thwarted belongingness, and hopelessness predicting same-timepoint (Wolford-Clevenger et al., 2021) and next-day suicidal thoughts (Czyz et al., 2019).

Although research examining constructs within the remaining theoretical frameworks (i.e., IMV, 3ST, MST) was sparse, several notable findings emerged. Hopelessness, a fundamental construct across all theories, was consistently shown to have significant positive within-person associations with same-timepoint (n = 7; Aadahl et al., 2021; Czyz et al., 2019; Czyz et al., 2021; Czyz et al., 2021; Czyz et al., 2021; Kleiman et al., 2017; Wolford-Clevenger et al., 2020, 2021) and next-timepoint suicidal thoughts (next survey within day = 1; Kleiman et al., 2017; next daily diary survey = 1; Czyz et al., 2021; next study timepoint = 1; Janackovski et al., 2022). Several studies also found that hopelessness interacted with other key constructs within the theoretical frameworks. Two studies demonstrated significant within-person interactions between hopelessness, IPTS, and 3ST constructs (Czyz et al., 2019; Wolford-Clevenger et al., 2020). Czyz et al. (2019) demonstrated that both perceived burdensomeness and thwarted belongingness interacted with hopelessness to predict within-person changes in same-timepoint suicidal thoughts. Additionally, Wolford-Clevenger et al. (2020) found a significant within-person interaction between hopelessness and psychological pain, such that psychological pain was only significantly associated with same-timepoint suicidal thoughts when individuals reported more hopelessness than usual.

Specific to the IMV, only one study examined the within-person effects of IMV constructs on suicidal thoughts (Aadahl et al., 2021). Defeat and entrapment were shown to have significant positive within-person and between-person associations with same-timepoint suicidal thoughts (Aadahl et al., 2021). However, entrapment only showed a significant within-person association with suicidal thoughts when it was the only predictor included in the model (Aadahl et al., 2021). When entrapment was included in a multivariate model with several other key predictors (e.g., negative affect, hopelessness, and defeat), entrapment did not show a significant positive within-person association with same-timepoint suicidal thoughts (Aadahl et al., 2021). Finally, one study focused on the Minority Stress Theory (MST) and demonstrated that daily minority stressors showed significant positive within-person associations with the intensity of suicidal thoughts (Mereish et al., 2023). The link between minority stressors and suicidal thoughts was found to operate indirectly through the effects of daily negative affect and emotion regulation challenges. Mereish et al. (2023) also found a significant positive between-person association between daily minority stressors and suicidal thought intensity. However, there were no significant between-person indirect effects of daily negative affect and emotion regulation on suicidal thought intensity. Figure 2 summarizes the key findings across studies examining associations between theoretical interpersonal factors and suicidal thoughts.

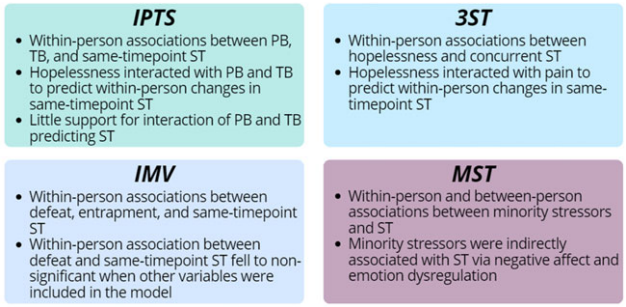

Figure 2. Summary of findings from studies examining the associations between theoretical interpersonal constructs ($n = 18$) and suicidal thoughts (ST). IPTS = Interpersonal Theory of Suicide; 3ST = Three-Step Theory of Suicide; IMV = Integrated Motivational-Volition Theory of Suicide; MST = Minority Stress Theory; PB = perceived burdensomeness; TB = thwarted belongingness.

Cross-theoretical interpersonal factors for suicidal thoughts

Consistent with theoretical factors, cross-theoretical factors also showed significant variability across the follow-up periods of the included studies. Approximately 40%–83% (adolescent median = 55%–69%; young adult median = 56%–73%) of the variance in cross-theoretical interpersonal factors was due to within-person effects compared to between-person effects. These studies demonstrated significant within-person associations between the following constructs and same-timepoint and next-timepoint suicidal thoughts: social support (same-timepoint $n = 3$; Coppersmith et al., 2019; Czyz et al., 2021; Mournet et al., 2022; next daily diary survey $n = 1$; Coppersmith et al., 2019), negative interpersonal experiences (same-timepoint $n = 3$; Defayette et al., 2023; Rogers, 2023; Zhu et al., 2022; next survey within day $n = 2$; Glenn et al., 2022; Victor et al., 2019; next study timepoint = 1; Zhu et al., 2022), heightened affective response following interpersonal experiences (same-timepoint $n = 2$; Hamilton et al., 2023; Mereish et al., 2023; next survey within day $n = 1$; Victor et al., 2019), and relationship quality (next study timepoint $n = 1$; Sewall et al., 2021). Notably, the direction of the within-person associations between social support and suicidal thinking differed based on the dimensions of social support measured. Specifically, *seeking* social

https://doi.org/10.1017/S0954579424001810 Published online by Cambridge University Press

Figure 3. Summary of findings from studies examining the association between cross-theoretical interpersonal constructs ($n = 14$) and suicidal thoughts (ST; same-timepoint and next-timepoint) at the within-person level.

support was positively associated with suicidal thinking (Mournet et al., 2022), whereas *receiving* social support was negatively associated with suicidal thinking (Coppersmith et al., 2019; Czyz et al., 2021). Two studies did not find significant within-person associations between seeking social support and next-timepoint suicidal thoughts (Al-Dajani et al., 2022; Kennard et al., 2018). In contrast to within-person findings, Al-Dajani and Czyz (2022) found a significantly negative between-person association between seeking social support and suicidal thoughts. On average, adolescents who sought support from peers and family experienced fewer suicidal thoughts overall (Al-Dajani & Czuz, 2022).

Additionally, several specific negative interpersonal experiences emerged as risk factors for suicidal thoughts at the within-person level. Victor et al. (2019) found significant positive within-person associations between rejection and criticism and suicidal urges on the next survey within the same day. These within-person associations between rejection and criticism and suicidal urges were partially mediated by negative affect. These associations were not found at the between-person level (Victor et al., 2019). Defayette et al. (2023) found a marginal within-person association between peer exclusion and same-timepoint suicidal thoughts. This study also found significant between-person associations between peer exclusion and suicidal thoughts. Additionally, Zhu et al. (2022) demonstrated significant positive within-person and between-person associations between victimization and suicidal thoughts. Only one study examined fluctuations in relationship quality (Sewall et al., 2021). Sewall et al. (2021) demonstrated that within-person changes in parent and peer relationship quality were significantly associated with decreases in the severity of next-timepoint suicidal thoughts. Finally, only one study examined social isolation preceding and during the COVID-19 pandemic (Fortgang et al., 2021). At the between-person level, this study demonstrated that young people who spent more time at home (objective social isolation) overall also reported more suicidal thoughts prior to the pandemic (Fortgang et al., 2021). However, this finding did not extend to perceived social isolation or objective social isolation during the pandemic at either the within-person or between-person level (Fortgang et al., 2021). Figure 3 summarizes the number of studies that found significant within-person associations between cross-theoretical interpersonal factors and suicidal thoughts.

Interpersonal factors for suicidal behavior

Although many of the studies reported on rates of suicidal behavior during the follow-up period ($n = 14$), few studies examined the effects of interpersonal factors on suicidal behaviors (13% $n = 4$; Koenig et al., 2021; Rogers, 2023; Sewall et al., 2021; Zhu et al., 2022). For example, Wolford-Clevenger et al. (2021) reported that 81% of the variance in suicidal behavior was due to within-person effects compared to between-person effects. This suggests that suicidal behaviors fluctuate dramatically within the same person. However, this study did not examine associations between interpersonal factors and suicidal behavior. Among the studies that did examine associations between interpersonal factors and suicidal behaviors, Rogers (2023) demonstrated significant positive within-person associations between hopelessness, perceived burdensomeness, thwarted belongingness, life event stress, and same-timepoint suicidal behavior when predictors were examined in separate models. For example, on prompts where individuals reported greater hopelessness than usual on a given day, they were more likely to engage in suicidal behavior. When predictors were examined in a multivariate model, only the within-person association between life event stress and same-timepoint suicidal behavior remained significant (Rogers, 2023). There was also a significant positive between-person association between hopelessness and suicidal behavior (Rogers, 2023). No predictors were shown to be associated with next-timepoint suicidal behavior at any level (Rogers, 2023). Sewall et al. (2021) demonstrated a significant within-person association between parent relationship quality and next-timepoint suicidal behavior. Individuals who reported increases in parental relationship quality were less likely to report engaging in suicidal behaviors at the next timepoints (Sewall et al., 2021). Zhu et al. (2022) demonstrated bidirectional within-person associations between victimization and next-timepoint suicidal behavior, such that increases in victimization were associated with increases in suicidal behavior. It should be noted that both studies examined changes in suicidal behavior over several years (Sewall et al., 2021; Zhu et al., 2022). Finally, Koenig and colleagueset al. (2021) found that peer attachment, but not maternal attachment, showed a significant negative within-person association with self-injury (did not specify if suicidal or non-suicidal in assessment measure) on the following survey within the same day. Individuals with poorer peer attachment were more likely to report self-injury on the following survey. Koenig et al. (2021) also found a significant negative between-person association between maternal attachment and self-injury.

Between-person moderators of associations between interpersonal factors and STBs

Developmental stage

Three studies included samples of adolescents and young adults (Hamilton et al., 2023; Janackovski et al., 2022; Nock et al., 2009), allowing the authors to examine the potential moderating effect of age. Hamilton et al. (2023) found a significant between-person association between age and negative affect reactivity to negative interpersonal events but not positive interpersonal events. As young people age, they report significantly less negative affect in response to negative interpersonal experiences (Hamilton et al., 2023). However, age did not significantly moderate the association between negative affect reactivity to negative interpersonal events and suicidal thoughts at the within-person or between-person level (Hamilton et al., 2023). Additionally, Nock et al. (2009) found that age did not significantly impact within-person fluctuations in STBs or interpersonal contexts in which STBs occurred. Janackovski et al. (2022) did not examine the effect of age on their findings. When broadly comparing differences in the previously summarized findings across adolescent and young adult studies, results remained relatively consistent across theoretical and cross-

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theoretical interpersonal factors. Among studies examining negative interpersonal events, within-person associations between negative interpersonal experiences and suicidal thoughts were more frequently found in young adult samples ($n = 3$) compared to adolescent samples ($n = 1$). There were no other significant differences in findings across adolescents and young adults. Finally, no studies examined longitudinal trajectories of how associations between interpersonal factors and STBs may change across adolescence and young adulthood.

Gender

Gender was one factor shown to impact associations between interpersonal factors and STBs. It should be noted that most studies conflated gender identity with sex assigned at birth or used these terms interchangeably. Sewall et al. (2021) demonstrated that females showed stronger within-person associations between peer relationship quality and STBs than males. Interestingly, this study also demonstrated stronger between-person associations between overall relationship quality (with parents and peers) and STBs among males compared to females. Additionally, Wolford-Clevenger et al. (2020) demonstrated that females reported greater perceived burdensomeness, whereas males reported greater thwarted belongingness. Zhu et al. (2022) also found that within-person associations between victimization and next-timepoint suicidal behavior differed based on gender. Females showed a positive within-person association between victimization and suicidal behavior, whereas males showed a negative within-person association between victimization and suicidal behavior (Zhu et al., 2022). These results suggest that relationship quality broadly is associated with STBs overall among males, whereas proximal changes in relationship quality may impact more near-term STBs among females. However, several studies demonstrated that gender did not significantly moderate associations between interpersonal factors and STBs among young people (Mereish et al., 2023; Nock et al., 2009; Schatten et al., 2021). Notably, in a sample of sexual and gender minority youth, Mereish et al. (2023) did not find that either gender or sex assigned at birth were significantly associated with suicidal thoughts.

Discussion

The present review extends previous literature by examining work on STBs at the within-person and between-person level among adolescents and young adults, two populations at increased risk for suicide. In line with previous reviews (e.g., Auerbach et al., 2023; Franklin et al., 2017; Kivelä et al., 2022), our results indicate that STBs fluctuate dynamically over short durations of time among young people. This review is the first to focus on interpersonal factors specifically. We found several key interpersonal factors that contribute to STBs among young people at the within-person level. Negative affective states related to interpersonal experiences (e.g., perceived burdensomeness), hopelessness, and seeking social support showed consistent positive within-person associations with suicidal thoughts. When young people felt like a burden, hopeless, and/or sought out support more than usual, they also reported more frequent and/or intense suicidal thoughts. Conversely, receiving social support was protective against suicidal thoughts at the within-person level. When young people received more social support compared to usual, they also reported fewer and/or less intense suicidal thoughts. Findings related to suicidal behavior were sparse, and only a handful of studies demonstrated distal within-person associations between several interpersonal factors (i.e., relationship quality, victimization) and suicidal behaviors. Results were relatively consistent across adolescent and young adult samples; however, several studies found that negative interpersonal experiences (e.g., rejection, criticism, exclusion) were more often associated with within-person fluctuations in suicidal thoughts among young adult samples. Although young adulthood is generally viewed as a developmental period with more interpersonal stability compared to adolescence, these findings highlight that interpersonal experiences remain highly salient and related to suicide risk during young adulthood. Taken together, these findings highlight that young people are susceptible to dynamic fluctuations in both the detrimental and protective effects of interpersonal factors related to suicide.

Key updates for interpersonal theories on STBs

The findings of the present review suggest that negative affective states related to interpersonal experiences and hopelessness about future circumstances are the most robust predictors of near-term suicidal thoughts among young people. Negative affective states related to interpersonal experiences (i.e., perceived burdensomeness, thwarted belongingness, interpersonal pain, negative affect reactivity to interpersonal events) were consistently shown to be associated with more frequent and intense suicidal thoughts at the within-person level. Consistent with the IPTS, perceived burdensomeness was one interpersonal risk factor with consistent within-person associations with both concurrent and prospective suicidal thoughts (Abbott et al., 2021; Coppersmith et al., 2019; Czyz et al., 2019; Czyz et al., 2021; Glenn et al., 2020; Jacobucci et al., 2022; Kleiman et al., 2017; Wolford-Clevenger et al., 2020, 113). These findings suggest that perceived burdensomeness varies over short periods and dynamically impacts risk for both concurrent and prospective suicidal thoughts among young people. In contrast to the IPTS, thwarted belongingness was only associated with within-person fluctuations in concurrent suicidal thoughts but not prospective suicidal thoughts. Similarly, the remaining negative interpersonal affective states (i.e., interpersonal pain, negative affect reactivity to interpersonal events) were only shown to be associated with concurrent suicidal thoughts. Future research and theories should consider what makes perceived burdensomeness a particularly potent interpersonal risk factor for both concurrent and prospective suicidal thoughts.

Hopelessness also emerged as a key within-person risk factor for suicidal thoughts. In moments when young people felt more hopeless than they typically do, they also reported more frequent and/or intense suicidal thoughts. Hopelessness also interacted with negative interpersonal affective states at the within-person level (i.e., perceived burdensomeness, thwarted belongingness, pain; Czyz et al., 2019; Wolford-Clevenger et al., 2020, 2021). Specifically, perceived burdensomeness, thwarted belongingness, and interpersonal pain were significantly associated with within-person fluctuations in suicidal thoughts only at high levels of hopelessness. Hopelessness may impact an individual's feelings and perceptions of their future circumstances and lead them to view their future more negatively. This is consistent with theories on hopelessness, which argue that individuals with high hopelessness struggle to generate alternative solutions in novel situations or when problems arise, which may lead them to consider suicide in the face of stressors (Snyder et al., 1991). Work on effective suicide interventions also highlights the importance of hopelessness. Suicide interventions often focus on increasing skills

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to manage negative affective states while simultaneously having youth identify reasons to continue to live (Linehan, 2018), which are protective against hopelessness. It should be noted that hopelessness is both an affective and cognitive state that encompasses feelings of pessimism and negative expectations about the future (Requero et al., 2021). However, none of the studies in the present review examined both affective and cognitive components of hopelessness. Recent work has shown that a lack of optimism (McKean et al., 2018) and certainty about the absence of positive outcomes in the future (Rosario-Williams et al., 2021) were stronger predictors of suicidal thinking among young people compared to pessimism and certainty about negative outcomes. More work is needed to clarify how affective and cognitive components of hopelessness dynamically impact one another and subsequent changes in STBs in daily life among young people.

Although most studies included in the present review examined subjective, intraindividual responses to interpersonal experiences, several studies also examined actual exposure to interpersonal stressors. Specifically, exposure to adverse interpersonal events (e.g., arguments, criticism, being ignored, breaking a promise; Glenn et al., 2022), minority stressors (Mereish et al., 2023), and victimization (Zhu et al., 2022) were associated with same-timepoint suicidal thoughts at the within-person level. In line with the stress generation hypothesis of suicide (Kleiman, 2014; Liu & Spirito, 2019), STBs are associated with increased risk for future STBs via intraindividual responses to interpersonal stressors. Factors that characterize young people with STBs (e.g., feeling like a burden, poor interpersonal problem-solving) may lead to more significant difficulties when responding to interpersonal stressors. For example, if an individual feels rejected after a short conversation with their partner, they could believe their partner does not want to talk to them because they are a burden and subsequent STBs (Kleiman, et al., 2014). This perception might lead them to avoid future conversations, which might generate more stress and lead to feeling isolated, not belonging, and future experiences of STBs (Kleiman, 2014). In line with the stress generation hypothesis, two studies found that within-person associations between exposure to interpersonal stressors and suicidal thoughts were partially mediated by intraindividual responses to such stressors (i.e., thwarted belongingness, affect, emotion dysregulation; Glenn et al., 2022; Mereish et al., 2023). It should be noted that several interpersonal stressors were only associated with suicidal thoughts at the between-person level, including peer exclusion (Defayette et al., 2023), objective social isolation (Fortgang et al., 2021), being alone (Nock et al., 2009), and arguments with others (Nock et al., 2009). However, few studies included both measures of exposure and intraindividual responses to interpersonal experiences. This may be an important focus for future research in order to parse apart how different components of interpersonal experiences contribute to suicide risk among young people.

Receiving and seeking social support emerged as within-person protective and risk factors for suicidal thoughts, respectively. Moments when young people felt supported by others, they also reported fewer and less intense suicidal thoughts at the within-person level (Coppersmith et al., 2019; Czyz et al., 2021). Alternatively, this suggests that moments when young people do not feel supported may be times when the risk for suicide is elevated. It should be noted that Mournet et al. (2022) found a significant positive within-person association between seeking support and suicidal thoughts. When young adults sought out more social support than usual, they also reported more frequent and intense suicidal thoughts (Mournet et al., 2022). Similarly, Czyz et al. (2021) found that adolescents were more likely to seek out professional support from mental health care providers on days when they experienced more frequent and/or intense suicidal thoughts. This is in contrast with previous reviews, which have primarily found that seeking social support is protective against suicidal thoughts at the between-person level (King & Merchant, 2008; Whitlock et al., 2014). In line with past reviews, Al-Dajani and Czyz (2022) study included in the present review found a significant negative between-person association between seeking social support and suicidal thinking. These findings suggest that although seeking social support may be a protective factor overall, moments in which young people seek out social support more than usual may reflect periods of elevated distress and suicidal thoughts. Associations between social support seeking and suicidal thoughts were contemporaneous, and more research examining time-lagged associations could advance our understanding of whether support seeking is protective against prospective suicidal thoughts. Additionally, exploring which types of social support (i.e., peer, parent mental health professional) are most effective for young people during moments when suicide risk is elevated could improve our just-in-time interventions.

Based on the findings of the present review, we propose that the combination of painful interpersonal affective states (e.g., perceived burdensomeness) and negative expectations about the future (hopelessness) may lead young people to consider suicide in daily life. This proposed model is consistent with previous reviews (see Kivelä et al., 2022) and interpersonal theories of suicide (i.e., IPTS, 3ST). Our findings suggest that proximal changes (i.e., within the same day, the next day) in suicidal thoughts do not solely arise from negative interpersonal affective states. Instead, the combination of negative interpersonal affective pain (i.e., feeling like a burden) and hopelessness contribute to within-person fluctuations in suicidal thoughts. Hopelessness also had both within-person and between-person positive associations with perceived burdensomeness, thwarted belongingness, and entrapment (Aadahl et al., 2021; Wolford-Clevenger et al., 2020, 2021). Times when young people experience heightened interpersonal pain due to their *current* interpersonal experiences and foresee *future* experiences to be negative may be times when risk for suicidal thoughts is elevated. Receiving social support emerged as a critical protective factor for suicidal thoughts among young people; when young people felt supported, they reported fewer and/or less intense suicidal thoughts. Given that the majority of studies only found concurrent within-person associations using EMA and daily diary methods, same-day interpersonal factors may be most impactful on same-day suicidal thoughts.

Implications for future research

STBs

Based on the present review, several key directions should be explored in future intensive longitudinal research on STBs among young people. First, studies varied considerably in the frequency and dimensions of STBs they evaluated. Studies most frequently examined the intensity, variability, and/or presence/absence of STBs since the previous assessment timepoint. Two studies demonstrated that individuals with higher overall mean levels of STBs reported greater within-person variability in STBs (Kleiman et al., 2017; Czyz et al., 2021). Previous research suggests that variability in STBs may be a better predictor of future STBs compared to intensity or duration (Witte et al., 2005). However, few

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studies included in the present review tested this directly. Other studies have found that other individuals with higher overall mean levels of STBs report less within-person variability in STBs (Kleiman & Liu, 2018), suggesting that some individuals may exhibit a more persistent pattern of elevated STBs. These different profiles in mean and variability in STBs may be driven by a number of factors (e.g., study design, age group, limited number of studies. Studies varied in the number of questions used to assess STBs and the number of assessment timepoints). Previous reviews (Ammerman & Law, 2022; Kivelä et al., 2022) found that rates of STBs did not meaningfully differ based on the length of the follow-up period or prompt frequency. This review found that although adherence to intensive longitudinal procedures was equivalent across study designs, rates of suicidal thoughts did vary based on study design. Among EMA studies, approximately 47% of participants endorsed suicidal thoughts on 18% of the EMA prompts. Among daily diary studies, approximately 62% of participants endorsed suicidal thoughts on 32% of daily diary prompts. Whether these differences are driven by the frequency of prompts in EMA studies or other factors related to study design (i.e., follow-up period, participant fatigue) remains unclear. Further, emerging work demonstrates that different types of STBs may operate on different timescales. Coppersmith et al. (2022) found that suicidal intent had a shorter duration and was more predictive of future intent compared to suicidal desire over shorter periods (i.e., 2–3 hr). Given the low base rates of STBs, further investigation into how the frequency and duration of intensive longitudinal assessments impact findings is warranted to improve our methods used to capture STBs in daily life. Additionally, more research identifying which dimensions of STBs are most important and informative in predicting future STBs is still needed.

Second, interpersonal factors that contribute to suicidal behaviors remain understudied, and warrant increased research efforts. Only four studies examined how interpersonal factors impact within-person changes in suicidal behaviors. Notably, these few studies found that suicidal behaviors vary considerably over short periods among young people. However, these studies found that few of the interpersonal factors associated with suicidal thoughts were also associated with suicidal behaviors. Greater investigation of how interpersonal factors contribute to constructs related to suicidal behaviors (e.g., capability for suicide) may be another way to further our understanding of such behaviors. Capability for suicide has been previously associated with factors that increase pain tolerance (e.g., self-harm) and decrease fear of death (e.g., substance use). Previous reviews have been mixed as to whether interpersonal factors contribute to the capability for suicide and subsequent suicidal behaviors (Burke et al., 2018; May & Victor, 2018; Bayliss et al., 2022). Focusing on higher-risk samples with a recent history of suicidal behaviors over time may also improve our understanding of near-term factors that contribute to suicidal behaviors. Notably, the reliance on self-reported suicidal behaviors across most of the literature may be biased for a variety of different reasons, including motivation to conceal suicide plans and intentions (Glenn & Nock, 2014). Relatedly, real-time methods (i.e., EMA) may be less well suited to capture suicidal behavior, given the ethical obligations of researchers to follow up or intervene when the risk for suicide is imminent. Retrospective intensive longitudinal designs with multiple frequent assessments over long follow-up periods (e.g., timeline follow-back) are well positioned to capture suicidal behaviors in line with ethical guidelines and given bias in real-time self-report measures. Additionally, intensive methods examining objective markers and processes that contribute to suicidal behaviors that do not rely on self-report measures, such as passive sensing study designs, may be important to incorporate in future research on suicidal behaviors. Passive measures could also be paired with retrospective intensive longitudinal methods to provide a more nuanced understanding of near-term processes surrounding suicidal behavior. Researchers should carefully consider these future directions when devising studies investigating suicidal behaviors among young people. Given that previous research indicates that nearly 70% of young people who attempt suicide die on their first suicide attempt (McKean et al., 2018), understanding which times and under what circumstances young people are most at risk for engaging in suicidal behavior is critical to saving lives.

Third, we replicated findings from previous reviews showing concurrent suicidal thoughts were the most robust predictors of prospective suicidal thoughts. Young people who report concurrent suicidal thoughts are also more likely to report suicidal thoughts in the future. Several studies found that within-person associations between interpersonal factors and prospective suicidal thoughts became non-significant when controlling for concurrent suicidal thoughts. These findings are concerning, given that previous work has shown that relying on current suicidal thoughts to identify which individuals will go on to attempt suicide yields high false positive rates (Large, 2018; Nock et al., 2022). Researchers have started to apply advanced quantitative methods, such as machine learning, to more easily combine across multiple, large streams of data to determine which set of factors is most effective in predicting STBs (Nock et al., 2022). However, such methods are still in their infancy and are largely inaccessible to most clinicians. More work is needed to identify proximal time-varying risk factors beyond concurrent STBs and how such factors interact with one another to improve our ability to predict when young people are most at risk for STBs in real time.

Interpersonal factors for STBs

The present review also has implications for future work examining interpersonal factors for STBs among young people. First, more work examining how interpersonal risk for suicide extends to social contexts and experiences that have been missed by traditional measures (e.g., minority stressors, online interpersonal stressors) is sorely needed. Only one study in the present review examined how minority stressors confer risk for STBs among young adults in daily life. Specifically, Mereish et al. (2023) found that negative interpersonal affective pain resulting from minority stressors was associated with within-person increases in suicidal thoughts. Nevertheless, the field has largely failed to capture these types of negative interpersonal experiences that contribute to STBs. This is particularly concerning given growing work showing that individuals with historically minoritized identities (e.g., LGBTQ + individuals, BIPOC individuals) have high rates of STBs (Choukas-Bradley & Thoma, 2022; Phillips, 2022). Future researchers should continue to examine how minority stressors operate in daily life and contribute to risk for STBs among young people.

Relatedly, none of the studies in the present review examined differences in interpersonal factors across offline and online contexts. Social technologies are used nearly universally among young people. Approximately 95% of adolescents (Anderson et al., 2023) and 92% of young adults (Lenhart et al., 2010) report having smartphone access. Additionally, up to 71% of adolescents report visiting a social media site daily (Anderson et al., 2023). Previous

https://doi.org/10.1017/S0954579424001810 Published online by Cambridge University Press

research shows that overall time spent on online social networking platforms is inconsistently associated with mental health outcomes among young people, including STBs (Choukas-Bradley et al., 2023; Nesi et al., 2021). Growing work suggests that specific behaviors and experiences online may be more accurate predictors of mental health outcomes among young people. However, none of the studies included in this review assessed whether interpersonal factors occurred in an in-person versus online context. For example, Zhu et al. (2022) found that young people who experienced more victimization than typical reported more frequent and/or intense suicidal thoughts, but did not distinguish whether victimization occurred offline or online. Young people who experience victimization in person are also more likely to experience victimization online (Chen et al., 2017). This example highlights how interpersonal factors for STBs may carry over from in-person to online contexts. Therefore, more work is needed to determine how specific interpersonal contexts (i.e., offline, online) may confer risk for STBs among young people.

Lastly, the studies in the present review focused on proximal, acute interpersonal factors. While such work advances our understanding of the proximal factors associated with STBs, this work has largely ignored how these acute experiences may interact with the cumulative effects of chronic interpersonal factors across time and development. Previous reviews on interpersonal factors associated with STBs indicate that chronic levels of victimization, social rejection/exclusion, maltreatment, and abuse are broadly associated with suicide risk (for more details, see Cheek et al., 2020; McEvoy et al., 2023; van Geel et al., 2022). Young people who have experienced chronic levels of these interpersonal risk factors may be the individuals most impacted by acute fluctuations in interpersonal factors. Buitron et al. (2016) found a small but positive correlation between chronic and episodic interpersonal stress, although the authors did not examine the interactive effect of chronic and episodic interpersonal stress on suicidal thoughts. This study also found that the association between chronic interpersonal stress, but not episodic interpersonal stress, and suicidal thoughts was accounted for by perceived burdensomeness (Buitron et al., 2016). Authors suggest that ongoing interpersonal stress may contribute to one's developing sense of belonging and subsequently increase the risk for suicidal thinking. Future intensive longitudinal work should aim to assess both acute and chronic interpersonal factors to provide a more comprehensive understanding of interpersonal risk for suicide.

Implications for clinical practice

The present review demonstrates that STBs fluctuate dramatically in daily life among young people, as do interpersonal factors that contribute to STBs. Several interpersonal factors (i.e., perceived burdensomeness, hopelessness, social support) may be important real-world markers of imminent risk for suicide that just-in-time interventions could leverage. Just-in-time mobile safety interventions are designed to adapt therapeutic supports over time based on an individual's changing risk status and contexts to deliver supports when the person needs supports the most (Coppersmith et al., 2022). Time-varying interpersonal risk factors for STBs could be monitored and used as markers to trigger appropriate social supports (e.g., therapeutic messages, contact with therapeutic support). The present review suggests that times when young people feel like a burden and hopeless may be key times to deliver social supports. However, it is unclear at what intensity and/or frequency of a particular interpersonal risk factor should intervention techniques be applied. Future research should aim to clarify which combination of factors and what level of intensity may be most reflective of current suicide risk. Our results also suggest that social support is an important protective factor that could be used to mitigate risk when young people are experiencing heightened levels of perceived burdensomeness and/or hopelessness. It should be noted that such an approach would require individuals to report on their interpersonal experiences repeatedly over short periods, which might contribute to the high participant burden associated with intensive longitudinal methods. Identifying passive interpersonal makers of suicide risk to incorporate into just-in-time interventions may be an important future research direction.

Limitations

Despite the strengths of the present review, several limitations should be noted. First, many studies collapsed across *specific* types of STBs, which limits our ability to determine if interpersonal factors differentially impact STBs in real time. Second, most studies included in the review focused on samples with predominantly White and female individuals. Relatedly, the majority of studies poorly differentiated between several key demographic factors that have been shown to impact suicide risk, such as gender identity versus sexuality. Future research should assess different components of identity to elucidate the role that interpersonal factors may play in suicide risk for individuals with diverse and intersecting identities. Additionally, two studies included in the present review exceeded the maximum age cutoff but were included as they were the only intensive longitudinal studies examining constructs within the IMV and 3ST theories (Aadahl et al., 2021; Wolford-Clevenger et al., 2020). More research is needed to determine if these theories are supported at both the within-person and between-person levels among young people. Finally, the median sample size of the included studies was 74, which might have limited the studies' power to detect small-to-moderate effects. Previous research has shown that associations between interpersonal factors and STBs have small-to-weak effect sizes (Chu et al., 2017). Given the infrequency of STBs even in high-risk samples, future work should aim to recruit large samples and conduct studies over longer durations to maximize their power to detect these effects. Overall, there was a small number of studies examining both within-person and between-person associations between interpersonal risk factors associated with STBs, despite consistent research showing that variance in STBs has a large within-person component. Researchers should continue to utilize intensive longitudinal research methods and statistical approaches that can examine both within-person and between-person effects.

Conclusions

Given recent increases in rates of STBs among adolescents and young adults, identifying proximal risk factors that contribute to STBs in real time is critical for saving lives. The present review adds to the existing literature by examining within-person associations between interpersonal factors, which are highly developmentally salient for young people, and STBs. Results from the present review demonstrate that STBs and related interpersonal factors are highly variable in daily life among young people. Heightened negative affect states related to interpersonal experiences (e.g., perceived burdensomeness) and hopelessness emerged as two key time-varying and proximal risk factors for STBs among young people. Receiving social support emerged as a time-vary and proximal

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protective factor against STBs in young people. These risk and protective factors may be particularly important to incorporate into safety interventions and could serve as markers for STBs among young people in daily life. Investigating STBs using intensive longitudinal methods is critical to advance our understanding of how specific factors operate in real time and impact STBs among young people.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S0954579424001810.

Competing interests. None.

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